

ERIOGONUM ABERTIANUM AND ITS VARIETIES

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Dr. John Torrey described *Eriogonum Abertianum* in Major Emory's "Notes of a Military Reconnaissance" (p. 151, 1848). The plant is an annual, ordinarily dichotomously or trichotomously branched near or above the base, canescently tomentose to villous, with campanulate involucre bearing many flowers; the perianth parts are in two series, the outer three expanded, more or less orbicular, membranous-scarious, covering the narrow inner ones. This species is closely related to *E. pharnaceoides* Torr., differing in the pubescence, the leaf shape, and in the more expanded outer perianth segments which are thinner and more scarious. It is also related to *E. ovalifolium* Nutt., from which it differs in being an annual, in the pubescence and shape of its leaves, and in the open rather than condensed inflorescence.

A study of material from the Mesilla Valley, New Mexico, indicated that there were two different entities which keyed, in the Flora of New Mexico by Wootton and Standley, to *Eriogonum Abertianum*. In the synonymy was given the name *Eriogonum cyclosepalum* Greene (Muhlenbergia 6: 1. 1910) the description of which seemed to fit one of the Mesilla Valley plants. The remainder of the material agreed better with *E. pinetorum* as described by Greene in the same paper than with *E. Abertianum* Torr. as interpreted by him.

In an effort to settle the problem, *Eriogonum Abertianum* and related species were studied in the herbaria of Pomona College, California Academy of Sciences, Los Angeles Museum, and the University of California, Berkeley. The material examined included isotypes and cotypes of *E. pinetorum* Greene, *E. cyclosepalum* Greene, *E. arizonicum* Gandoger, *E. Abertianum* var. *neomexicanum* Gandoger, and *E. Abertianum* var. *ruberrimum* Gandoger. Dr. Gleason had photographed for me at the New York Botanical Garden the type of *E. Abertianum* in the Torrey Herbarium.

As shown by these photographs, Dr. Torrey had at hand only one sheet which bears material collected by Abert. This sheet contains two specimens, one a small fragment of the top of a plant, labelled "July 17, Lt. Abert," and another marked "Oct. 14th, 1846, Emory." A careful study of Emory's Report shows that on July 17 Lieutenant Abert was near the junction of the Pawnee River with the Arkansas River, in Pawnee County, Kansas, considerably out of the present range of the species, and on October 14, Emory was along the Rio Grande, apparently in Sierra County, New Mexico. Both of these plants seem to be *Eriogonum Abertianum* var. *neomexicanum* Gandoger. The other sheet in Torrey's herbarium bears four specimens. The plant on the left of the sheet, no. 1, collected in August by Dr. Bigelow from "Near San Diego (Vall. of R. Grande)" is *E. Abertianum*

var. *bracteatum*. The remaining three specimens should all be referred to *E. Abertianum* var. *cyclosepalum*. They were collected in Mexico by Dr. Parry: no. 2 at Chihuahua; nos. 3 and 4 from Janos [Janas?], northern Chihuahua. All of these plants were named simply "*Eriogonum Abertianum*" by Torrey.

The groups of plants in this complex are best treated as varieties of a single species, *Eriogonum Abertianum* Torr., because of the insignificance of the characters in which they differ. Miss S. G. Stokes (The Genus *Eriogonum*, 36. 1936) recognizes subsp. *typicum* and subsp. *lappulaceum*, considering other described segregates as mere ecological variations. The varieties treated in this paper, except var. *lappulaceum* would be included by her in subsp. *typicum*. Since these plants as observed in the field do not behave as ecological variants, I cannot agree with her treatment.

KEY TO THE VARIETIES OF *ERIOGONUM ABERTIANUM*

- Outer sepals obovate, almost truncate at top 7. *E. Abertianum*
var. *lappulaceum*
- Outer sepals nearly circular, broadest in the middle.
- Plant paniculate above; bracts inconspicuous, upper part of plant not leafy.
- Peduncles mostly under 0.5 mm. long; outer sepals dark reddish, 2 mm. broad or narrower 2. *E. Abertianum*
var. *ruberrimum*
- Peduncles mostly over 0.5 mm. long, outer sepals only slightly reddish, 2.5 mm. broad or wider. 1. *E. Abertianum*
var. *neomexicanum*
- Plant not paniculate above, peduncles of involucre axillary, plant leafy or conspicuously bracteate to top.
- Peduncles mostly under 1 cm. long, heads usually under 1 cm. across, plant bracteate above 5. *E. Abertianum*
var. *bracteatum*
- Peduncles mostly over 1 cm. long, heads usually over 1 cm. across, plant bracteate or foliaceous above.
- Leaves reduced to lanceolate bracts above, basal leaves attenuate at base, their petioles 2 cm. long or under 6. *E. Abertianum*
var. *Gillespiei*
- Leaves not much reduced above, basal leaves usually truncate or cordate at base, petioles of basal leaves usually over 2 cm. long.
- Plants branching at base, usually floriferous to base; outer sepals 3.5-4.5 mm. broad, slightly longer than broad 4. *E. Abertianum*
var. *cyclosepalum*
- Plants branching dichotomously or trichotomously somewhat above base, floriferous above only; outer sepals 2.5-3.5 mm. broad, slightly broader than long 3. *E. Abertianum*
var. *villosum*

1. *ERIOGONUM ABERTIANUM* Torr. var. *NEOMEXICANUM* Gandoger, in Compt. Rend. Soc. Bot. Belg. 42: 196. 1906. *E. pinetorum* Greene, *Muhlenbergia* 6: 3. 1910.

Erect plants, soft villous but not conspicuously whitish except on young parts, seldom branched at base but usually repeatedly dichotomously or trichotomously branched above into a definite panicle, peduncles and upper branches usually filiform; petioles 1-2 cm. long, leaves near base broadly oblong-ovate to narrowly ovate, obtuse to acute at apex, truncate to attenuate at base, reduced above to small linear bracts 5 mm. or less long in the panicle inflorescence; peduncles 0.5-3 cm. long, filiform, usually 1 at a node, surmounted by a single turbinate involucre, 2-2.5 mm. high, 3 mm. in diameter with lanceolate lobes usually 2.5-4 mm. long; flowers rather numerous, exerted on fine filiform pedicels, the rather spherical inflorescence 5-10 mm. in diameter; outer sepals 2.5-3 mm. broad, circular or slightly longer than broad, membranous-scarious, yellowish-white, tinged with red.

Specimens examined. KANSAS. Arkansas River, Pawnee Co., July 17, 1846, *Lt. Abert* (type, New York Bot. Gard.). ARIZONA. Tucson, *Thorner* 196; Tucson, May 10, 1896, *J. W. Toumey*; Outlaw Cañon, Chiricahua Mts., *Goodding* 2373; Pearce, Cochise Co., Aug. 19, 1910, *W. W. Jones*; Antelope, *C. A. Purpus* 52; Clifton, *A. Davidson* 445. NEW MEXICO. Rio Grande, Sierra Co., Oct. 14, 1846, *Lt. Emory* (cotype). Dona Ana County: vicinity of Pyramid (Bishop's Cap) Peak, Mesilla Valley, south end of the Organ Mts., *F. R. Fosberg* S3300, S3487, S3550, S3653, S3700, S3744, S3790, S3794, S3801, S4047; mesa west of the Organ Mts., Oct. 17, 1903, *E. O. Wooton*; Organ Mts., *E. O. Wooton* 427 (type of var. *neomexicanum*); Mogollon Mts., Sierra Co., *H. L. Rusby* 359.

2. *ERIOGONUM ABERTIANUM* Torr. var. *RUBERRIMUM* Gandoger, in Compt. Rend. Soc. Bot. Belg. 42: 196. 1906.

Similar to var. *neomexicanum* but with peduncles mostly under 0.5 cm. long; flowers just as numerous in the involucre, but not so far exerted, heads very compact, 5-6 mm. in diameter; outer sepals 1.5-2 mm. broad, nearly circular, dark reddish in color.

Specimens examined. MEXICO. Near Casas Grandes, Chihuahua, *C. H. T. Townsend* & *C. M. Barker* 369 (type).

3. *ERIOGONUM ABERTIANUM* Torr. var. *villosum* var. nov.

Planta erecta alba-villosa ad basin versus simplex; pedunculi robusti in axillis superioribus solitarii, 2-6 cm. longi; sepala exteriora quam longa latiora.

Erect plant, up to 4 dm. tall, more or less white villous, more so in young plants, stem usually not branched at base, dichotomously or trichotomously (often several times) branched above, floriferous ordinarily at upper nodes only, leafy to the top, the

leaves somewhat smaller above, but not conspicuously reduced; leaves oblong-ovate, acute to obtuse at apex, truncate or at least abruptly contracted at the base; petioles 2–3 cm. long on lower leaves, becoming shorter above to about 0.5 cm.; peduncles solitary in the upper axils, rather robust, usually 2–6 cm. long (very short in material collected at Douglas, Ariz., by L. N. Goodding, May 22, 1907); involucre solitary, 3 mm. high, 3 mm. in diameter, turbinate, with ovate-lanceolate lobes about as long as the tube; flowers many, exerted on rather long pedicels, the spherical inflorescence 1–1.5 cm. in diameter; outer sepals 2.5–3.5 mm. broad, nearly circular, slightly broader than long, with a narrow sinus at the base, membranous-scarious.

Specimens examined. ARIZONA. Road to Soldier's Camp, Santa Catalina Mts., alt. 6000 ft., *G. J. Goodman & C. L. Hitchcock 1263* (type, Herb. Univ. Calif. no. 426,460); Douglas, *L. N. Goodding 2265* (low plant, very villous, peduncles mostly short, possibly quite young); Lowell, *W. F. Parish 233* (in habit resembling var. *cyclosepalum*); Chiricahua Mts., Sept., 1881, *J. G. Lemmon and wife*; Tucson, May 10, 1896, *J. W. Toumey*; Nogales, May 24, 1892, *T. S. Brandegee*; Douglas, May 17, 1915, *Carlson*; Ox Bow Hill, Apache Trail, *Eastwood 17524*. NEW MEXICO. Mimbres River, Grant Co., July 1, 1904, alt. 5500 ft., *O. B. Metcalfe 1057*; Mogollon Creek, Mogollon Mts., Socorro Co., alt. 8000 ft., *O. B. Metcalfe 234*; Deming, Grant Co., alt. 4400 ft., *J. W. Gillespie 5321*. TEXAS. El Paso, April 18, 1884, *M. E. Jones*. MEXICO. San Requis, Lower Calif., May 2, 1889, *T. S. Brandegee*; Dry Mts., east of Rio San Miguel, Chihuahua, *C. V. Hartman 654* (last two collections extremely villous).

4. *ERIOGONUM ABERTIANUM* Torr. var. *cyclosepalum* (Greene) comb. nov. *E. cyclosepalum* Greene, *Muhlenbergia* 6: 1. 1910.

Very similar to var. *villosum* in general appearance and in pubescence but branched at base, depressed in habit, 1 dm. or less tall, floriferous to the base; peduncles 1–3 cm. long; involucre turbinate, the tube 2 mm. high, 3 mm. in diameter, the lobes very large, more or less spatulate with rounded apex, 6–10 mm. long, 1–2 mm. broad; flowers many, the cluster 1–1.5 cm. in diameter; outer sepals 3.5–4 mm. broad, nearly circular but slightly longer than broad, membranous-scarious, yellow tinged with red.

Specimens examined. NEW MEXICO. Mesa west of the Organ Mts., Dona Ana Co., May, 1905, *E. O. Wooton*; Silver City, *Eastwood 8419*. TEXAS. El Paso, *M. E. Jones 3738*; Fort Bliss, April 22, 1915, *Carlson*. MEXICO. Chihuahua, April, *Dr. Parry*; Janos [Janas?] March, *Dr. Parry*; San Luis Potosi, *J. G. Schaffner 2178*.

5. *ERIOGONUM ABERTIANUM* Torr. var. *bracteatum* var. nov.

Planta basi ramulosa, viridis; ramuli adscendentes pluriramu-

losi saepe ad basin floriferi; folia parva supra reducta; pedunculi axillares, 5 mm. longi; involucre parva 2 mm. lata altaque, lobis 4-6 mm. longis; sepala exteriora quam longa latiora.

Plant branched at the base, soft villous, green in color, branches ascending, many times dichotomously or trichotomously branched, floriferous often almost to base, forming usually a small rounded plant, ordinarily not more than 2 dm. tall, but when in very favorable localities reaching a height of 4 dm.; leaves small, the lower short-petioled, ovate, usually obtuse at apex, attenuate at base, rapidly reduced to narrowly lanceolate, sessile bracts above, these seldom over 1 cm. long, but quite abundant; peduncles mostly about 5 mm. long, in axils from top often practically to base of plant; involucre small, turbinate, 2 mm. high, 2 mm. in diameter, with oblong-lanceolate lobes 4-6 mm. long, few-flowered; flowers exerted on rather long pedicels, the spherical inflorescence 5-10 mm. in diameter; outer sepals 3-3.5 mm. broad, nearly circular, slightly broader than long, with a narrow sinus at the base, membranous-scarious, yellow, tinged with red.

Specimens examined. NEW MEXICO. Near San Antonio, Socorro Co., *Ferris & Duncan 2309*; vicinity of Pyramid (Bishop's Cap) Peak, near south end of Organ Mts., Dona Ana Co., *F. R. Fosberg S3244, S3307, S3486* (type, Herb. Los Angeles Mus.), *S3641, S3654, S3793*. TEXAS. Gravelly mesa north of Chisos Mts., Brewster Co., *J. A. Moore & J. A. Steyermark 3267*; Fort Davis, Davis Mts., Jeff Davis Co., *Ferris & Duncan, 2641*. Locality uncertain. "Near San Diego (Vall. of R. Grande)," August, *Bigelow*.

6. ERIOGONUM ABERTIANUM Torr. var. *Gillespiei* var. nov.

Planta var. *bracteato* similis sed diffusior; pedunculi 1-2 cm. longi; involucre multiflora 3 mm. alta, 3-4 mm. lata.

Similar to var. *bracteatum*, but plant more diffuse; peduncles mostly longer, 1-2 cm. long; involucre larger, many-flowered, 3 mm. high, 3-4 mm. in diameter, lobes 2.5-4.5 mm. long; inflorescence 1-1.5 cm. in diameter, outer sepals apparently not yellowish, as in var. *bracteatum*, but whitish, tinged with red, midrib very noticeable, dark red.

Specimens examined. ARIZONA. Apache Gap, Pinal Co., 2500 ft., *J. W. Gillespie 8797* (type, Herb. Univ. Calif. no. 489,490).

7. ERIOGONUM ABERTIANUM Torr. var. *lappulaceum* (Greene) comb. nov. *E. lappulaceum* Greene, *Muhlenbergia* 6: 2. 1910. *E. Abertianum* subsp. *lappulaceum* Stokes, Gen. Eriog. 37. 1936.

Erect or ascending, 1.5 dm. high, softly villous but not hoary, branches few, alternate, in no degree cymose or paniculate; leaves on lower undivided portion of stem rhombic-ovate to elliptic, short petioled; involucre few-flowered, the lobes oblong,

longer than the body, often equalling the flowers, outer sepals obovate, almost truncate obtuse at apex (*ex. char.*).

I have not seen specimens of this variety but, judging from the description, it belongs here. Greene cites only one collection: Camp Charlotte, Texas, 1889, *Nealley*.

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AN UNDESCRIBED SPECIES OF VIOLA FROM UTAH

MIL0 S. BAKER

Viola Clauseniana sp. nov. Herba acaulescens; rhizoma simplex, carnosum radices numerosas adventitias ferens; folia 3-5 cm. lata, 4-5 cm. longa subtus venis sparsissime pilosa aliter glabra, prostrata deltoidea decurrentia crasse et acute serrata apicibus obtusis; petioli 5-11 cm. longi alati; stipulae 1.5-2 cm. longae anguste lanceolatae, inconspicue glanduloso-dentatae; pedunculi 8-14 cm. longi crassi erecti; bracteolae 5-6 mm. longae subulatae floribus propinquaе; sepala 2-3 mm. lata 7-9 mm. longa ovato-lanceolata acutiuscula crasse nervata auriculis sparse pubescentibus; corolla lilacina petalis omnibus in parte inferiore pallidioribus; petala superiora 7 mm. lata 15 mm. longa anguste obovata, petala lateralia 7 mm. lata 15 mm. longa oblongo-obovata imberbia, petalum infimum 8 mm. latum 20 mm. longum oblongo-spatulatum calcare obtuso complanatusculo incluso; staminum appendices anteriores ochroleucae posteriores 1.2 mm. lata 3 mm. longae virides; pistillum 5 mm. longum; stylus capitellatus ovario non flexus, tuba stigmatosa brevi nuda, foramine diametro tertiam partem capituli; flores cleistogami complures; capsula 6-7 mm. lata 8-10 mm. longa oblonga apice truncato; semina 1.2 mm. lata 2 mm. longa nigra minute scabrida, pondere 1 mg.; caruncula subterminalis seminis dimidio brevior.

Acaulescent; rootstock simple, fleshy, giving rise to numerous adventitious roots; leaves prostrate forming a rosette which may reach 28 cm. in diameter; glabrous except for occasional hairs along the veins on the ventral surface of the leaves; leaf blades conspicuously deltoid, decurrent on the petiole, coarsely and sharply serrate, obtuse at apex, 3 to 5 cm. wide, 4 to 5 cm. long, on winged petioles 5 to 11 cm. in length; stipules narrowly lanceolate, faintly glandular-toothed, 1.5 to 2 cm. long; peduncles unusually stout, erect 8 to 14 cm. high, bractlets subulate, near the flower 5 to 6 mm. long; sepals conspicuously nerved, slightly pubescent on the auricles, ovate-lanceolate, somewhat acute, 2 to 3 mm. wide, 7 to 9 mm. long; corolla light violet with a lighter center, 2.5 cm. in diameter; upper petals narrowly obovate 7 mm. wide, 15 mm. long; lateral petals oblong-obovate, wholly beardless, 7 mm. wide, 15 mm. long; spur petal oblong-spatulate 8 mm.